

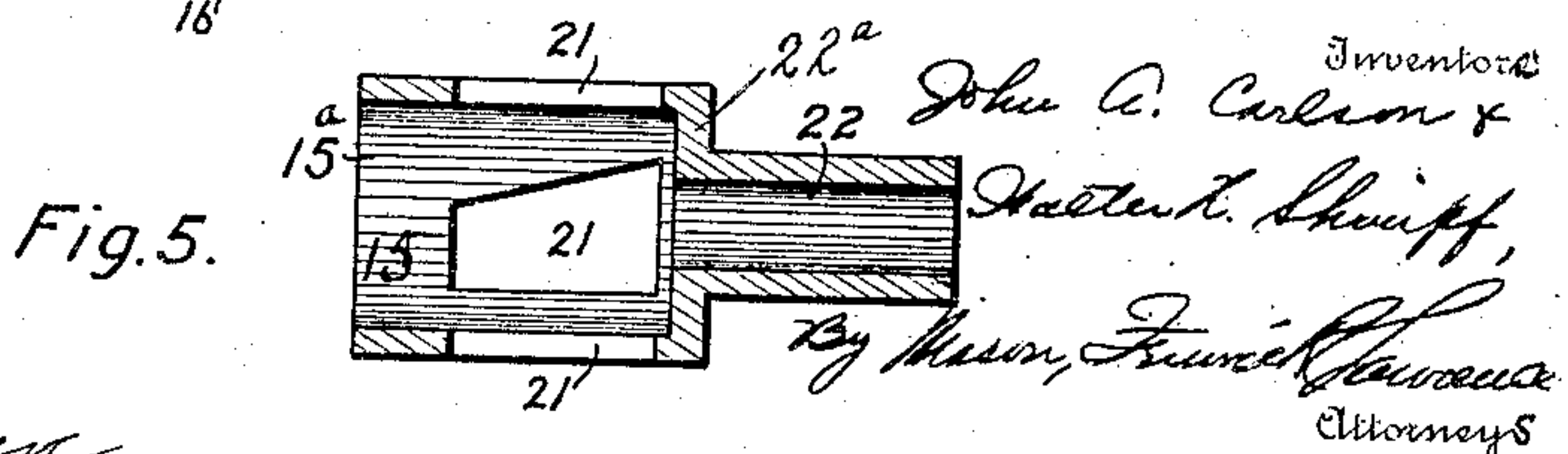
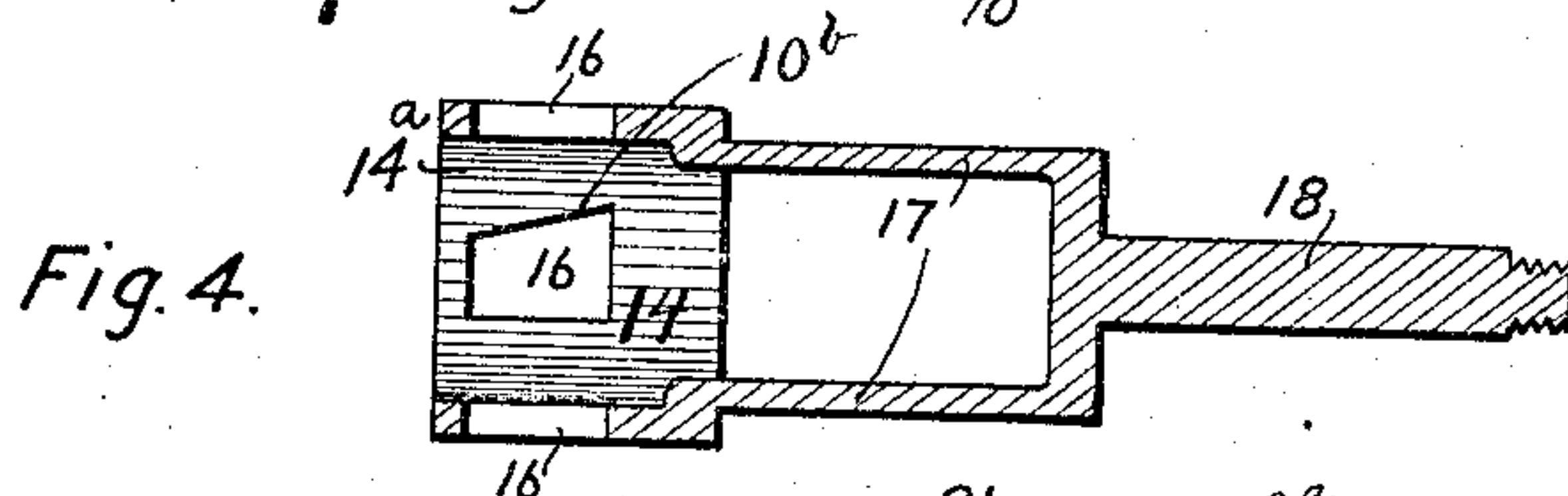
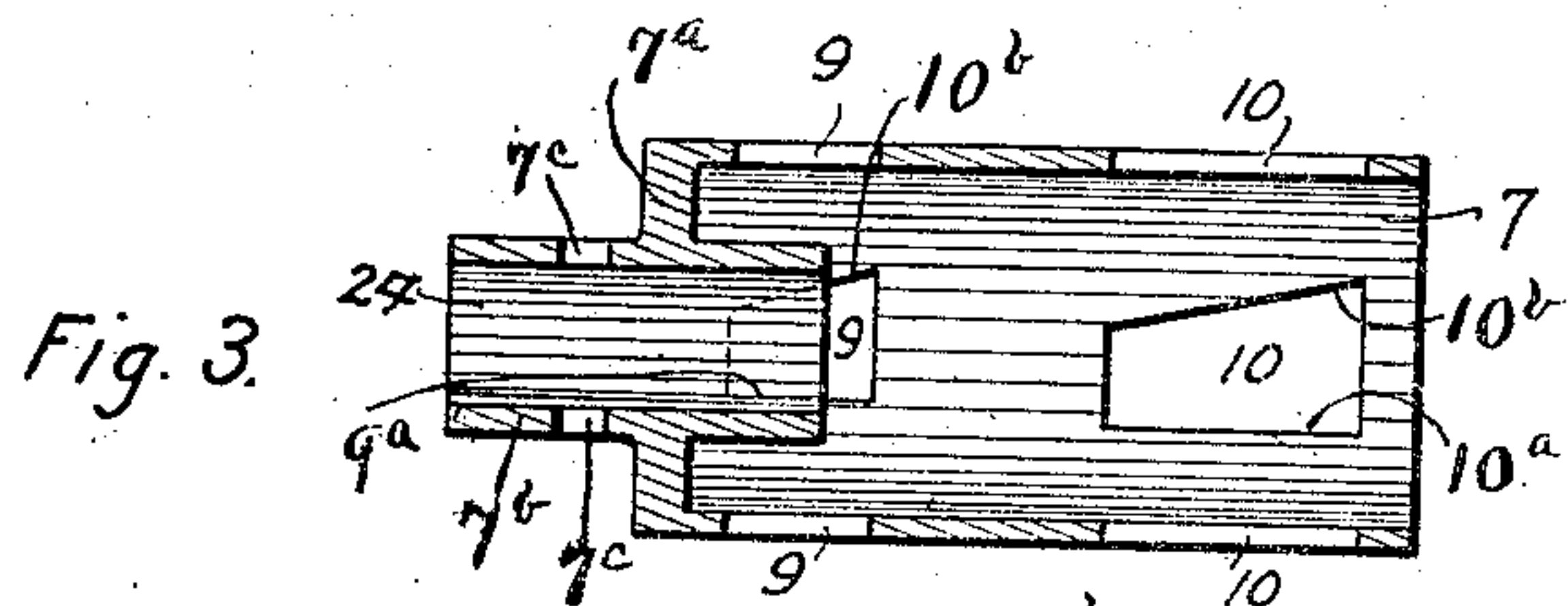
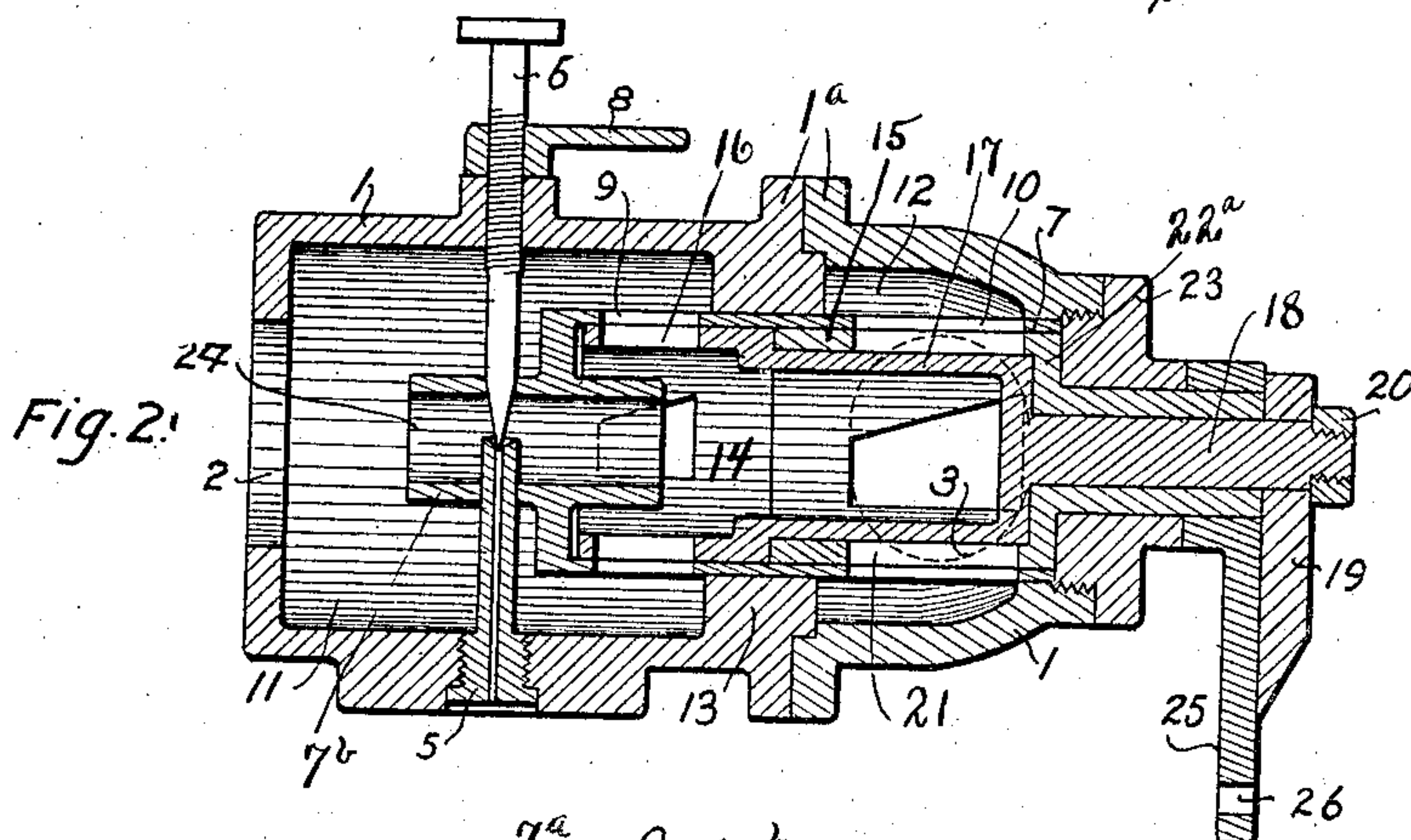
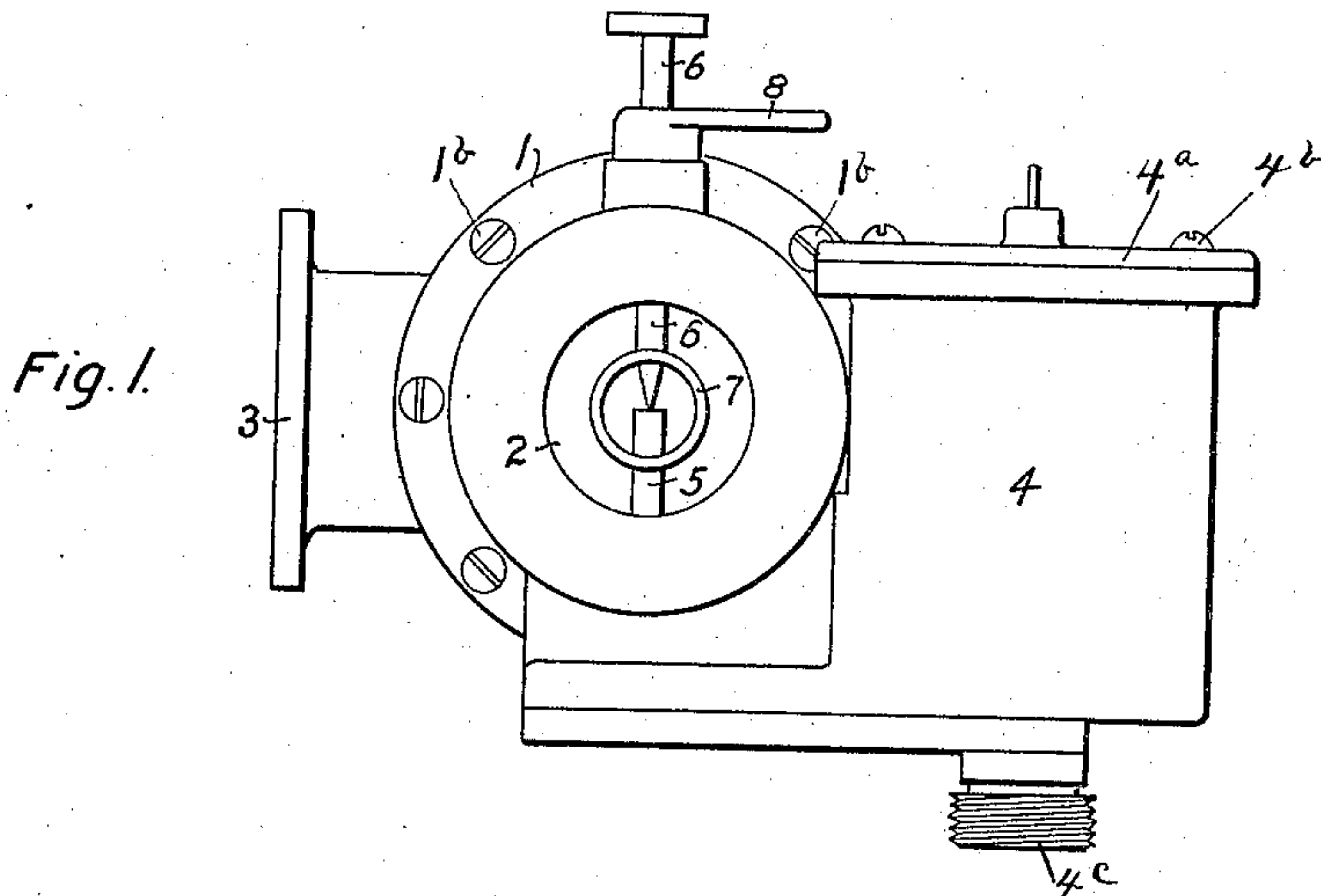
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CARBURETER.

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CARBURETER.

No. 832,532.

Specification of Letters Patent.

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To all whom it may concern.

Be it known that we, JOHN A. CARLSON and WALTER H. SHIMPF, citizens of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Carbureters; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in gasolene-engines, and more particularly to a carbureter therefor.

One of the objects of the invention is the provision of means for obtaining a more complete mixture of air and gas and to facilitate the regulation of the proportions of air and gas in the mixture.

Another object of the invention is the improvement of the construction of valve means employed in the construction of a carbureter.

A further object of the invention is the construction of a carbureter which employs a minimum number of parts and is simple and comparatively inexpensive to construct.

With these and other object in view the invention consists of certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the claims hereto appended.

In the drawings, Figure 1 is the inlet end view of a device constructed in accordance with the present invention. Fig. 2 is a vertical longitudinal sectional view of the preferred form of our device. Fig. 3 is a vertical longitudinal sectional view of the valve-casing. Fig. 4 is a vertical longitudinal sectional view of the primary member of the valve. Fig. 5 is a vertical longitudinal sectional view of the auxiliary member of the valve.

Our invention relates to improvements in a device for introducing gas and air in a mixed condition into the combustion-chamber of a gas-engine. The mechanical structure of our invention deals with a device employing a primary or outer casing, a valve-casing positioned within said primary casing, and valve means movably mounted within said valve-casing.

The preferred structure of our invention is illustrated in the accompanying drawings, in which—

1 designates the primary or outer casing, which contains the mixing-chamber and valve means. Air is admitted into the primary or outer casing through opening or port 2. The primary casing 1 is provided with a pipe or hollow extension 3, through which the mixture is passed into the combustion-chamber of an engine.

A gasolene tank or reservoir 4 is formed upon the primary casing 1 and is connected by suitable means to the removable gasolene stand-pipe 5. An adjustable pin 6 is carried by the casing 1. The pin 6 is employed for regulating the flow of gasolene from the stand-pipe 5. The pin 6 constitutes a needle-valve, which is fixedly secured in any adjusted position by means of lever-locking member 8. It will be obvious that by adjusting the locking member 8 toward the upper end of the pin 6 said pin may be adjusted upon the casing 1 for regulating the flow of liquids through the stand-pipe 5.

Positioned within and supported upon the internal collar or depending portion 13 of the primary or outer casing 1 is a valve casing or lining 7. The valve casing or lining 7 is partly closed at one end by means of a vertical portion 7^a, which is preferably integral with the auxiliary casing or thimble 7^b. The lining 7 is provided with an inlet, auxiliary air-port 9, and preferably with outlet-ports 10. In the small auxiliary casing or thimble 7^b there are formed apertures 7^c, within which are positioned the stand-pipe or plug 5 and the pin 6, constituting a needle-valve, Fig. 2.

The throttle-valve comprises a primary sleeve portion or plunger 14 and an auxiliary sleeve-like throttle plunger or member 15. The primary-sleeve portion 14 is preferably provided with inlet-ports 16. The outer circumference of the shells or sleeves 14^a and 15^a is the same as the inner circumference of the valve casing or lining 7. Integral with the shell 14^a of the primary member are substantially parallel portions or arms 17, which connect said shell or sleeve 14^a with the stem 18. The outer end of the stem 18 is threaded for receiving nut 20. The portions 17 of the primary member 14 of the valve are preferably segmental in cross-section for accom-

modating the auxiliary member 15 when positioned thereon, as depicted in Fig. 2.

The auxiliary member 15 of the valve is provided with outlet-ports 21, said member 15 being also provided with a hollow stem 22 and a vertical portion 22^a, which partly closes one end thereof. When in its normal position, the auxiliary member 15 is positioned upon the portions 17 of the primary member and is in engagement with the inner face of the stationary valve-casing 7, as clearly seen in Fig. 2. The hollow stem or sleeve fits over the stem or shank 18. After the valve-casing 7 has been positioned within the primary casing 1 and the valve means positioned within said valve-casing a locking-nut 23 is adjusted upon one end of the primary casing 1, Fig. 2, which entirely closes said end and holds the valve-casing and its valve in position. A primary lever 25 is swiveled upon the hollow stem or collar 22 of the primary member 15 and an auxiliary lever 19 carried by the stem or shank 18 of the primary member 14. By loosening the nut 20 the primary member 14 can be rotated independently of the auxiliary member 15; but if it is desired to synchronously actuate the primary and auxiliary members 14 and 15, respectively, the nut 20 is tightened against the auxiliary lever 19 and binds upon the primary lever 25, thereby firmly securing said levers 19 and 25 against independent movement. An aperture 26 is formed in the lever 25, (or any other ordinary means may be employed,) by which the lever is connected with the gear operated by the driver of the machine.

It is to be noted that the outlet of the stand-pipe 5 is positioned within the passage 24 of the casing 7^b and that some of the air is drawn from chamber 11 through this passage 24 into the mixing-chamber inside of the valve, and as the air comes through the passage 24 it draws with it the gas from the opening in the stand-pipe 5.

When the lever 25 is in its normal position, Fig. 3, it will be noted that the inlet-ports are to one side of a direct horizontal line with the outlet-ports—that is to say, the side 10^a of each of the ports 10 is not formed on the same horizontal line with side 9^a of the parts 9, Fig. 3. This is true of the ports in the valve, as well as in the casing. The objects of this positioning of the ports in the valve and casing is to force the air which comes in through the inlet-ports to move in a more or less spiral direction before reaching the outlet-ports, thus making the mixture within the chamber more complete. By turning lever 25 to the proper position both inlet and outlet ports will be closed, but an eighth-turn will throw both wide open. Then the valve is in the position shown in Fig. 2. When it is desired to increase the proportion of air in the mixture, the locking-nut 20 is loosened and lever 19 is

then turned slightly to the left and the nut 20 is then fastened tightly against said lever. The fastening of this nut binds the parts of the valve firmly together, so that all parts will turn together with the adjustment of the lever 25. It will then be seen that a sufficient turn of the lever 25 to throw the inlet-ports 9 and 16 wide open will not fully open the outlet-ports, and the result will be that the suction at the outlet-ports will be less for the reason that the outlet-ports are made similar; but while the outlet is less the amount of air passing through the inlet-ports will be the same, and this will result in a less suction through the passage 24, which in turn will result in a drawing of a less quantity of gas. If the reverse of this is desired, locking-nut 20 is loosened, lever 19 is turned to the right, thus throwing the outlet and inlet ports of the valve nearer upon a line. The locking-nut 20 is again fastened firmly against lever 19, and with the valve in this position a turn of the lever 25 will only open the outlet-ports, while leaving the inlet-ports not fully open. This will increase the suction through passage 24 of the auxiliary casing 7^b and draw more gas in proportion to the air. It will be noted that the ports in the valve-casing, as well as members 14 and 15, are not rectangular, but in each instance are provided with a side 10^b, which is formed at an angle to the longitudinal plane in which the other side is formed. This idea of the slanted sides of the ports makes it possible to obtain a more gradual turning on of the power than would be the case if the ports or openings were provided with parallel sides.

It is to be noted that the primary or outer casing is preferably cylindrical in shape and is constructed of sections, each section being provided with a flange 1^a. The flanges 1^a abut and are firmly secured together by suitable fastening means—as, for instance, screws 1^b, Fig. 1. The reservoir 4 is provided with a removable top 4^a, fixedly secured in position by suitable removable fastening means, as screws 4^b. The tubing 4^c is the main supply-pipe, and connection is made with the stand-pipe through drilled apertures in the body of the reservoir.

In the foregoing description we have described a device capable of regulating the proportion of the mixture passed into the combination-chamber of an engine without adjusting the gasoline or liquid valve, or, in other words, allowing the supply of gasoline to always remain the same. We have also shown and described the means for facilitating the mixing of the air and gas by passing the same spirally through the mixing-chamber, and thus making the mixture more complete.

What we claim is—

1. A device of the character described, comprising a primary casing, a stationary

valve-casing positioned within said primary casing, means to supply the fluid basis of the charge to said stationary casing, a valve member positioned within said valve-casing, said valve-casing and member provided with registering ports, each having a slanted side.

2. A device of the character described, comprising a primary casing, a stationary valve-casing positioned within said primary casing, means to supply the fluid basis of the charge to said valve-casing, said valve-casing provided with inlet and outlet ports and each of said ports provided with a straight side formed at an angle to the opposite side, valve members provided with inlet and outlet ports positioned within said valve-casing and each of said ports provided with a straight side formed at an angle to the opposite side, and means for adjusting said members.

3. A device of the character described, comprising a primary casing, a valve-casing positioned within said primary casing, means to supply the fluid basis of the charge to said valve-casing, valve members positioned within said valve-casing, said valve-casing and members provided with inlet and outlet ports, said inlet-ports being formed to one side of a direct, horizontal line with the outlet ports.

4. A device of the character described, comprising a primary casing provided with an internal collar, a stationary valve-casing supported by said collar, said valve-casing and collar providing chambers within said primary casing, said valve-casing provided with an auxiliary casing partially closing one end of the same, means to supply the fluid basis of the charge to said auxiliary casing, valve means positioned within said valve-casing, said valve means comprising movable members, said valve-casing and members provided with registering inlet and outlet ports and each of said ports provided with a slanted side, the inlet-ports being formed to one side of a direct, horizontal line with the outlet-ports.

5. A device of the character described, comprising a sectional, primary casing provided with an inlet and an outlet port, said casing provided with an internal, integral collar, a stationary, cylindrical valve-casing supported by said collar, said collar and valve-casing providing chambers within said primary casing, said valve-casing provided with an integral, auxiliary casing partly closing one end thereof, a stand-pipe extending into said auxiliary casing, a valve member extending into said auxiliary casing and capable of controlling the discharge of liquid through said stand-pipe, means for locking said valve member in an adjusted position, cylindrical members positioned within said valve-casing, said valve-casing and cylindrical members provided with inlet and outlet ports and each port having a slanted side, le-

vers connected to said cylindrical members, and means for securing said levers against independent adjustment.

6. A device of the character described, comprising a primary casing provided with an inlet and an exhaust port, a depending portion formed internally of said primary casing, a valve-casing carried by said depending portion, said depending portion and valve-casing dividing said primary casing into chambers, valved means for supplying the fluid basis of the charge to said valve-casing contiguous to said inlet-port, independently-adjustable members within said valve-casing, and said valve-casing and members provided with inlet and outlet ports, said ports affording direct communication between the chambers of said primary casing.

7. A device of the character described, comprising a primary casing provided with an inlet and an outlet opening, a stationary valve casing or lining positioned within said primary casing, said valve-casing provided with inlet and outlet ports formed entirely around the same, means carried within said primary casing and engaging said valve-casing intermediate said inlet and outlet ports for dividing said primary casing into chambers, means to supply the fluid basis of the charge to said valve-casing, independently-actuated valve members positioned within said valve-casing and being capable of closing said inlet and outlet ports, and levers secured to and extending at an angle from said valve members.

8. A device of the character described, comprising a primary casing provided with an inlet and an outlet port, a valve-casing positioned within said primary casing, annular means for supporting said valve-casing intermediate its ends and spacing said valve-casing from the side walls of said primary casing, said annular means and valve-casing dividing said primary casing into chambers, said valve-casing provided with inlet and outlet ports formed upon opposite sides of said annular means, the outlet-ports formed in different horizontal lines from said inlet-ports, lever-actuated valve means positioned within said valve-casing and being capable of independent movement for closing or opening said ports, and means to supply the fluid basis of the charge to said valve-casing.

9. A device of the character described, comprising a primary casing, a valve-casing provided with ports positioned within said primary casing, a cylindrical, primary member provided with arms terminating in an integral stem, positioned within said valve-casing, a cylindrical, auxiliary valve member positioned within said valve-casing and rotatably mounted upon said arms, a sleeve surrounding said stem and integral with said auxiliary valve member, each of said valve members provided with a port, and means to

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supply the fluid basis of a charge to said valve-casing.

10. A device of the character described, comprising a primary casing, a stationary valve-casing provided with ports, positioned within said primary casing, a primary valve member provided with a stem positioned within said valve-casing, an auxiliary valve member provided with a sleeve, positioned within said valve-casing, a sleeve surrounding said stem, each of said valve members provided with a port, levers fixedly secured to said sleeve and stem, and means to supply the fluid basis of the charge to said valve-casing.

11. A device of the character described, comprising a horizontal, stationary valve-casing provided with an inlet and an outlet port formed on different horizontal lines, each port provided with a side formed at an angle to its opposite side, independently-rotatable valve members provided with similarly-constructed ports, positioned within said valve-casing, the ports of said valve members being capable of registering with the ports of said valve-casing, whereby the size of said ports may be independently controlled, and means to supply the fluid basis of the charge to said valve-casing.

12. A device of the character described, comprising a horizontal, primary casing, a horizontal, stationary valve-casing positioned within said primary casing, said valve-casing provided with sets of inlet and outlet ports, each set extending entirely around said valve-casing, each port being formed with parallel ends, and sides at an angle to each other, means for independently opening or closing said inlet and outlet ports, and means to supply the fluid basis of the charge to said valve-casing.

13. A device of the character described, comprising a primary casing, a valve-casing positioned within said primary casing, said valve-casing provided with inlet and outlet ports, each port provided with parallel ends, and sides formed at an angle to each other, means independently opening or closing said ports, and means to supply the fluid basis of the charge to said casing.

14. A device of the character described, comprising a primary casing, a valve-casing positioned within said primary casing, said valve-casing provided with an inlet and an outlet port formed in different horizontal planes, each port provided with parallel ends, and sides formed at an angle to each other, independently-movable valve members provided with similarly-constructed ports, positioned within said valve-casing, and means to supply the fluid basis of the charge to said valve-casing.

15. A device of the character described, comprising a primary casing, a stationary valve-casing positioned within said primary

casing, means to supply the fluid basis of the charge to said stationary casing, said stationary casing provided with inlet and outlet ports, and independently-rotatable, cylindrical members positioned within said stationary casing, each member provided with a port, the ports of said members being capable of registering with the ports of said stationary casing.

16. A device of the character described, comprising a primary casing, said primary casing provided with an internal collar, a valve-casing supported by said collar, said valve-casing and collar producing chambers or compartments within said primary casing, cylindrical valve members positioned within said valve-casing, means for independently rotating said valve members, locking means for securing said members against independent movement, said valve-casing provided with inlet and outlet ports, the ports of said valve members being capable of registering with the ports of said valve-casing, and means to supply the fluid basis of a charge to said valve-casing.

17. A device of the character described, comprising a primary casing, a valve-casing positioned within said primary casing, means to supply the fluid basis of the charge to said valve-casing, independently-revoluble members positioned within said valve-casing, said valve-casing provided with inlet and outlet ports, said revoluble members provided with ports capable of registering with said ports of the valve-casing, means for preventing independent movement of said revoluble members, and means for independently adjusting each of said members.

18. A device of the character described, comprising a primary casing, a valve-casing carried by said primary casing, means to supply the fluid basis of the charge to said valve-casing, valve members carried by said valve-casing, said casing provided with inlet and outlet ports, said valve members provided with inlet and outlet ports adapted to register with said ports of the valve-casing, means for independently adjusting each of said members, and locking means for fixedly securing said members against independent movement.

19. A device of the character described, comprising a primary casing, a reservoir carried by said primary casing, said primary casing provided with an inlet and an outlet opening, an internal collar secured to said primary casing, a valve-casing supported by said collar, an auxiliary casing carried entirely by said valve-casing contiguous to the inlet-opening of said primary casing, means to supply the fluid basis of the charge to said auxiliary casing, said valve-casing provided with inlet and outlet ports, revoluble members positioned within said valve-casing, said members provided with inlet and outlet ports

adapted to register with said ports of the valve-casing, levers means for independently adjusting said members, and means for locking said members against independent movement.

20. A device of the character described, comprising a primary casing provided with an internal, depending portion, a valve-casing supported entirely by said depending portion, said depending portion and valve-casing producing chambers within said primary casing, said valve-casing provided with inlet and outlet ports affording direct communication between said chambers and the interior of the valve-casing, means to supply the fluid basis of the charge to said valve-casing, and independently-adjustable valve members positioned within said valve-casing, said members provided with ports adapted to register with the ports of said valve-casing.

21. A device of the character described, comprising a primary casing, a valve-casing carried by said primary casing, means to supply the fluid basis of the charge to said valve-casing, said valve-casing provided with inlet and outlet ports, a primary and an auxiliary valve member positioned within said valve-casing, said primary and auxiliary members provided with ports adapted to register with the ports of said valve-casing, said primary member provided with substantially parallel portions and an integral stem, said auxiliary port provided with a sleeve adapted to surround said stem of the primary member, levers carried by said stem and sleeve, said stem affording means for locking said levers against independent movement.

22. A device of the character described, comprising a casing, a valve-casing positioned within said casing, means to supply the fluid basis of the charge to said valve-casing, revoluble, primary and auxiliary valve members positioned within said valve-casing, said valve-casing provided with inlet and outlet ports, said members provided with ports adapted to register with the ports of said valve-casing, each of said members provided with an extension, a lever fixedly secured to each of said extensions, and means for securing said levers against independent movement.

23. A device of the character described, comprising a casing, a stationary valve-casing provided with inlet and outlet ports, positioned within said casing, means to supply the fluid basis of the charge to said valve-casing, revoluble members provided with inlet and outlet ports positioned within said valve-casing, the ports of said members adapted to register with the ports of said valve-casing, levers, and means for connecting said levers to said revoluble members.

24. A device of the character described, comprising a casing, a valve-casing positioned within said casing, said valve-casing

provided with inlet and outlet ports formed on different horizontal lines, and independently-rotatable valve members positioned within said valve-casing, said members provided with ports adapted to register with the ports of said valve-casing.

25. A device of the character described, comprising a primary casing, said casing provided with a port at one end and with a removable member closing its opposite end, a valve-casing provided with a partly-closed and an open end, positioned within said primary casing, means to supply the fluid basis of the charge to said valve-casing, said valve-casing provided with inlet and outlet ports, and independently-adjustable members positioned within said valve-casing, said members provided with inlet and outlet ports adapted to register with said ports of the valve-casing.

26. A carbureter, comprising a primary casing, a valve-casing carried by said primary casing, said valve-casing provided with inlet and outlet ports, independently-adjustable valve members carried by said valve-casing, said valve members provided with inlet and outlet ports adapted to register with the ports of said valve-casing, means for preventing independent adjustment of said valve members, and means to supply the fluid basis of the charge to said valve-casing.

27. A device of the character described, comprising a primary casing, an annular extension formed interiorly of said primary casing, a stationary valve-casing positioned within said primary casing and supported intermediate its ends upon said annular extension, said valve-casing provided with inlet and outlet ports formed upon opposite sides of said annular extension, an auxiliary casing supported entirely by and partly closing one end of said valve-casing, rotatable valve means provided with inlet and outlet ports, positioned within said valve-casing, the ports of said valve means adapted to register with the ports of said valve-casing, and means to supply the fluid basis of the charge to said auxiliary casing.

28. A device of the character described, comprising a primary casing, a stationary valve-casing positioned within and spaced from the side walls of said primary casing, an auxiliary casing integral with and carried entirely by one end of said valve-casing, said valve-casing provided with inlet and outlet ports, a primary valve member provided with an arm and a stem positioned within said valve-casing, an auxiliary valve member positioned within said valve-casing and mounted upon said arm and stem, said auxiliary valve member provided with an extension, said primary and auxiliary valve members provided with ports adapted to register with the ports of said valve-casing, levers fixedly secured to said stem and extension, and

means to supply the fluid basis of the charge to said auxiliary casing.

29. A device of the character described, comprising a primary casing, a stationary
5 valve-casing positioned within said primary casing, means to supply the basis of the charge to said valve-casing, said valve-casing provided with inlet and outlet ports formed upon different horizontal lines, and
10 revoluble valve means positioned within

said valve-casing and capable of controlling the size of the openings of said ports.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN A. CARLSON.
WALTER H. SHIMPF.

Witnesses:

A. J. FIORINI,
FRANK S. BREENE.